REMARKS

This amendment amends claim 3-6 and 8-12, to eliminate multiple dependent claims. If any fees are due in connection with the filing of this Amendment, the Commissioner is hereby authorized to charge such fees to Deposit Account 50-0388 (Order No. UDL1P044C1)

Respectfully submitted,
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VERSION WITH MARKINGS SHOWING CHANGES MADE

CLAIMS

3. A method according to claim 1 **[or claim 2]**wherein the singlet count rate is related to the spontaneous fission rate, the self-multiplication factor, where

$$m = \frac{1-p}{(1-p)\upsilon_I}$$

and p = probability first neturon causes induced fission; the detection efficiency and the α,n reaction rate by the function,

$$R_1 = \epsilon . F_s . M . \nu_{s1} . (1+\alpha)$$

4. A method according to **[any preceding claim]** **claim 1** in which the doublet counting rate is related to the spontaneous fission rate, the self-multiplication factor, where

$$m = \frac{1-p}{(1-p)\upsilon_I}$$

and p = probability first neutron causes induced fission; the detection efficiency and the α,n reaction rate by the function

$$R_2 = \epsilon^2 \cdot F_s \cdot M^2 \cdot \nu_{s2} \cdot \left(1 + (M-1)(1+\alpha)\frac{\nu_{s1}\nu_{i1}}{\nu_{s2}(\nu_{i1}-1)}\right)$$

5. A method according to **[any preceding claim]** **claim 1** wherein the triplet counting rate is related to the spontaneous fission rate, the self-multiplication factor, where

$$m = \frac{1-p}{(1-p)\upsilon_I}$$

and p = probability first neutron causes induced fission; the detection efficiency and the α,n reaction rate by the function

$$R_1 = \varepsilon^1 \cdot F_s \cdot M^1 \cdot \nu_{s1} \cdot \left(1 + 2(M-1)\frac{\nu_{s2}\nu_{i2}}{\nu_{s1}(\nu_{i1}-1)} + (M-1)(1+\alpha)\frac{\nu_{s1}\nu_{i2}}{\nu_{s1}(\nu_{i1}-1)}\left(1 + 2(M-1)\frac{\nu_{i2}^2}{\nu_{i2}(\nu_{s1}-1)} \right) \right)$$

6. A method according **[to any preceding claim]** **claim 1** in which the probability distribution assigned to individual variables or counting rates is a normal distribution or a flat distribution or a triangular distribution.

8. A method according to claim 6 **[or claim 7]** in which triangular distributions are used for one or more, and most preferably all, the individual variables, such as detector efficiency, fission rate, multiplication distribution and alpha distribution.

9. A method according to claim 6 **[or claim 7 or claim 8]** in which a flat distribution is used for the fission rate.

10. A method according to **[any preceding claim]** **claim 6** in which the distribution(s) are constrained within certain applied constraints/boundaries, such that the probability distribution factor is zero beyond the constraints or such that the probability distribution factor rapidly tends to zero beyond certain values.

11. A method according to **[any of claims 6 to 10]** **claim 6** in which one or more of the constraints are set according to information gathered from a preceding isotopic consideration or analysis of the sample.

12. a method according to **[any preceding claim]** **claim 6** in which the increasing, and preferably maximisation, of the product of the probability distribution factors (pdf's) is preferably performed as an iterative process.